WHAT IS CLAIMED IS:

1. A method of image compression, comprising the steps of:

recursively transforming an image using Discrete Wavelet Transform to create a plurality of levels including at least a first level, multiple n levels, and a low-low pass subband of level n, wherein n is the number of levels;

quantizing the transformed image at each level; and

datapacking the quantized image, wherein the datapacking step further comprises:

encoding of the first level using adaptive run length of zero coefficients;

encoding of the multiple n levels using run-length coding of zero coefficients and a predetermined two-knob huffman table for non-zero coefficients; and

encoding of the low-low pass subband of level n using a low frequency packing algorithm.

2. The method of claim 1, wherein the step of encoding of the first level further comprises the steps of:

scanning the quantized image to find largest coefficient magnitude;

storing the largest non-zero coefficient magnitude in a header;

run-length coding of the zero coefficients in the quantized image; and

encoding the non-zero coefficients using a predetermined huffman table.

3. The method of claim 2, wherein the step of encoding of the first level further comprises the steps of: if a non-zero coefficient is not found in the predetermined huffman table, encoding an escape code and encoding the non-zero coefficient in signed bit representation.

4. The method of claim 3, wherein the step of encoding of the first level further comprises the steps of: encoding a run in the quantized image by using three bits; and

if three bits are not enough to write the run, encoding a zero codeword.

5. The method of claim 1, wherein the step of encoding of the multiple n levels, further comprises the steps of: scanning the quantized image after run-length coding of the zero coefficients to find the longest run; and storing the longest run.

6. The method of claim 5, wherein the step of encoding of the multiple n levels, further comprises the step of: determining a long run or a short run based on the magnitude of the longest run.

7. The method of claim 1, wherein in low frequency algorithm further comprises the step of: calculating a difference between a plurality of DC coefficients and a plurality of AC coefficients, thereby defining a plurality of DC difference values.

8. The method of claim 7, wherein in low frequency algorithm further comprises the steps of:
writing the DC coefficients and the DC difference values to an encoded data stream in unsigned bit representation in a rowwise manner.

9. A method of image compression, comprising the steps of:
recursively transforming an image using Discrete Wavelet Transform to create a plurality of levels;
quantizing the transformed image at each level; and
encoding of the quantized image at each level using run-length coding of a plurality of zero coefficients and a predetermined two-knob huffman table for a plurality of non-zero coefficients.

10. An encoder of compressing image data, comprising:
a two-dimensional discrete wavelet filter for transforming the input data into plurality of coefficients forming a first level, intermediate levels, and a low-low subband of a highest

level;

a quantizer for mapping the coefficients into discrete regions by a predetermined compression parameter; and

a datapacker for compressing the mapped coefficients wherein the datapacker encodes a plurality of zero coefficients at the first level by adaptive run length coding, a plurality of non-zero coefficients at the intermediate levels by a two-knob Huffman coding and the low-low subband at the highest level by low frequency coding.

11. The encoder of claim 10, wherein the datapacker at the first level the adaptive run length coding further comprises scanning the mapped coefficients to find largest coefficient magnitude, storing the largest non-zero coefficient magnitude in a header, and run-length coding of the zero coefficients.

12. The encoder of claim 11, wherein the datapacker at the first level encodes the non-zero coefficients using a predetermined huffman table after run length coding of the zero coefficients.

13. The encoder of claim 12, wherein the datapacker at the first level encodes a run of zero coefficients by writing a zero indicator followed by a predetermined number of data elements,

14. The encoder of claim 13, wherein the datapacker at the first level encodes an additional zero indicator if the predetermined number of data elements are not enough to write the run.

15. The encoder of claim 10, wherein the datapacker at the low-low subband at the highest level encodes a difference between a plurality of DC coefficients and a plurality of AC coefficients.

16. A computer readable medium having a program for performing image compression, comprising the steps of:

recursively transforming an image using Discrete Wavelet Transform to create a plurality of levels including at least a first level, multiple n levels, and a low-low pass subband of level n, wherein n is the number of levels;

quantizing the transformed image at each level; and

datapacking the quantized image, wherein the datapacking step further comprises:

encoding of the first level using adaptive run length of zero coefficients;

encoding of the multiple n levels using run-length coding of zero coefficients and a predetermined two-knob huffman table for non-zero coefficients; and

encoding of the low-low pass subband of level n using a low frequency packing algorithm.

17. A method of compressing a digital image data set, comprising the steps of:

performing a plurality of two-dimension discrete wavelet transformations on the data set, wherein the plurality of transformations includes a first level, a plurality of intermediate levels, a last low-pass subband of a last level;

quantizing the plurality of transformations;

datapacking the quantized first level using a first packing algorithm;

datapacking the plurality of quantized intermediate levels using a second packing algorithm; and

datapacking the low pass subband of the last level using a third packing algorithm.

18. The method of claim 17, wherein the first packing algorithm includes the step of:

adaptive run-length coding of a plurality of zero coefficients.

19. The method of claim 17, wherein the second packing algorithm includes the steps of:

run-length coding of a plurality of zero coefficients; and

two-knob huffman coding of a plurality of non-zero coefficients.

20. The method of claim 13, wherein the third packing algorithm includes the steps of:

low-frequency differential datapacking of a plurality of coefficients on a row-wise fashion, including a DC coefficient.

21. A method compressing image data, comprising the steps of:

encoding using a first packing algorithm for a first level of a transformation; and

encoding using a second packing algorithm for a second level of the transformation.

22. The method of claim 21, wherein the first packing algorithm includes the step of:

adaptive run-length coding of a plurality of zero coefficients.

23. The method of claim 21, wherein the second packing algorithm includes the steps of:

run-length coding of a plurality of zero coefficients; and

two-knob huffman coding of a plurality of non-zero coefficients.

24. The method of claim 21, further comprising the step of encoding using a third packing algorithm for a third level of transformation.

25. The method of claim 24, wherein the third packing algorithm includes the steps of:

low-frequency differential datapacking of a plurality of coefficients on a row-wise fashion, including a DC coefficient.